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(19) (CA) **CANADIAN PATENT** (12)

(54) FOLDABLE HITCH

(72) Kjeldsli, Elmer M.,  
Canada

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NO. OF CLAIMS 6

Canada

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## FOLDABLE HITCH

BACKGROUND OF THE INVENTION

This invention relates to new and useful improvements in foldable hitches, particularly hitches adapted to be used with the bumper of such vehicles as trucks and the like. Such hitch assemblies are difficult to store when not in use and are usually detached and stored separately. Such hitches which are usually triangular when viewed in plan, are also difficult to engage with the hitch pole of the device being towed which is usually a farm implement or the like.

SUMMARY OF THE INVENTION

The present invention overcomes these disadvantages by providing firstly, a hitch assembly which is easily stored under the bumper when not in use and secondly, when extended for use, is easily aligned and attached to the hitch pole of the farm implement being secured to the hitch and in accordance with the invention, there is provided a hitch assembly for securement to a vehicle bumper comprising in combination a main telescopic hitch arm and a secondary telescopic hitch arm, means pivotally securing each arm by the inner end thereof to said bumper in spaced apart relationship for pivoting in a horizontal plane, a hitch clevis



secured to the outer end of said main hitch arm, means co-operating between the outer end of said secondary hitch arm to detachably secure same to adjacent the outer end of said main hitch arm thereby forming a substantially triangular hitch configuration when viewed in plan and means to store said arms in side by side relationship under the associated vehicle bumper, when not in use.

Another advantage of the present invention is that it is easily stored under the bumper when not in use.

10 A still further advantage of the invention is that it is easily attached to bumpers of trucks and the like with the minimum of effort.

A still further advantage of the invention is to provide a device of the character herewithin described which is simple in construction, economical in manufacture and otherwise well suited to the purpose for which it is designed.

With the foregoing in view, and other advantages as will become apparent to those skilled in the art to which 20 this invention relates as this specification proceeds, the invention is herein described by reference to the accompanying drawings forming a part hereof, which includes a description of the preferred typical embodiments of the principles of the present invention, in which:

DESCRIPTION OF THE DRAWINGS

Figure 1 is a top plan view of the hitch assembly in the hitch position and shown attached to a bumper.

Figure 2 is a view similar to Figure 1, but showing the hitch in the folded position and with the bumper removed for clarity.

Figure 3 is a front elevation of Figure 2.

Figure 4 is a fragmentary cross sectional view along the line 4-4 of Figure 2.

10 Figure 5 is a fragmentary end view of the hitch in the stored position.

Figure 6 is a view similar to Figure 5, but showing the secondary arm rotatable for extension.

Figure 7 is a fragmentary cross sectional view of the locking device of the telescoping arms shown in the locked position.

Figure 8 is a view similar to Figure 7 but showing the structure immediately prior to the automatic locking.

20 In the drawings like characters of reference indicate corresponding parts in the different figures.

DETAILED DESCRIPTION

Proceeding therefore to describe the invention in detail, reference character 10 illustrates schematically, the plan view of part of a bumper secured to a vehicle in the usual manner, it being understood that the bumper may either be on the front of the vehicle or on the rear there-

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of, depending upon circumstances.

The hitch collectively designated 11 consists of a main hitch arm 12 and a secondary hitch arm 13.

The main hitch arm includes the inner portion 14 thereof which is preferably formed from hollow square cross sectioned tubing and an outer section 15 which is also preferably formed from hollow cross sectioned tubing and is telescopically engaged with the inner section 14 thereof.

This telescopic relationship of the two sections 12 and 15 is adjustable and controlled by a spring loaded lock bolt assembly 16 passing through plate 17 secured to the side of the tube 14 and extending through the wall of the tube to engage through the wall of the outer tube 15 and into an aperture in the wall of the outer section 15 when fully extended.

The secondary hitch arm is also telescopic and includes the inner section 18, and the outer section 19 telescopically engaging therein in a manner and configuration similar to the main hitch arm assembly 12 with a spring loaded locking bolt 16 engaging plate 17 in a manner similar to that hereinbefore described and securing the two sections 18 and 19 in the extended position one with the other.

The inner ends of both of the sections are provided with spaced and parallel clevis attachment plates 20 by which means they are pivotally attached by pivot bolt assemblies 21 to one end of a lug 22 forming part of an attachment bracket 23 consisting of a pair of plates 22A.

This in turn is pivotally secured by means of pin 23A to a bracket or plate 24 depending downwardly and secured to frame member 10A which supports bumper 10. However, it will be appreciated that other forms of pivotal attachment to the bumper may be utilized always providing that sufficient strength is incorporated in the design and that the two telescopic arms 12 and 13 may pivot relative to the bumper in a horizontal plane and, desirably, that one arm 13 can rotate through 180° for storage as will hereinafter be described.

10 The main hitch arm 12 also includes a hitch clevis assembly collectively designated 25 on the outer end 26 of the section 15 and this hitch clevis assembly includes a pair of spaced and parallel horizontally situated plates 27 extending at an angle from the end 26 and being apertured to receive the correspondingly apertured outer end 28 of the secondary arm 13. A detachable angulated pin 29 engages through the aligned apertures and holds the two hitch arms 12 and 13 together at the common apex formed by the hitch clevis 25 thus providing a substantially triangular configuration when viewed in plan as shown in  
20 Figure 1.

The hitch clevis assembly 25 also includes the main spaced and parallel horizontally situated clevis plates 30 which may engage over the distal end 31 of an imple-

plement hitch pole 32 and be detachably secured by means of an angulated pin 33 passing through aligning apertures in a conventional manner. The securement of the portions 27 of the hitch clevis assembly 25, to the end of arm 15 may be by welding or any other conventional means.

When in the position illustrated in Figure 1, the hitch clevis 25 may be aligned with the hitch pole 32 by releasing the lock bolts 16 of the arms 12 and 13 so that the telescopic relationship of the two arms may be varied manually in order to assist in positioning the clevis over the end 31 of the hitch pole whereupon the pin 33 may be dropped into place. The truck is then driven forwardly thus equalizing the arms and fully extending same whereupon the spring loaded lock bolts automatically engage the outer sections.

When it is desired to store the hitch assembly, the pin 33 is removed thus disconnecting the hitch pole 32. The pin 29 is next removed disconnecting arm 13 from arm 12 whereupon bolt 16 is released so that section 19 of arm 13 may be fully retracted.

This secondary arm is then swung inwardly parallel to and just under bumper 10 and rotated.

The clamp bolt 16 of arm 12 is next released and the section 15 fully retracted within the section 14.

This main hitch arm is then swung parallel to the arm 13 and the bumper 10. The secondary arm is then rotated through 180° thus folding it behind the bracket 24 and substantially parallel to the bumper. In this position, an apertured lug 34, extending from the underside of the section 14 adjacent the inner end thereof, may slide under the apertured outer end 28 of the section 19 of the secondary arm 13 whereupon the pin 29 may engage through the apertured outer end 28 and through the apertured lug 34 thus detachably securing the two hitch arms together in side by side relationship just under the bumper 10 until again required.

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Figures 7 and 8 show the automatic action of the locking assembly with the spring loaded pin or bolt 16 engaging behind the inner end 37 of the arm or tube 15 when fully locked.

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Figure 8 shows the pin 16 lifted against the spring pressure of spring 38 so that the arm portion 15 can be retracted relative to the arm portion 14. A guide tube 37A is welded to the end of arm portions 14. When extended towards the locked position, the inner end 16A of the pin 16 rides up the ramp 36 situated on the inner end 37 of arm 15 thus allowing the arm to extend fully with the pin automatically engaging behind the inner end of the arm as clearly shown in Figure 7. The spring 38 extends around shank 35 of the pin or bolt 16 and reacts between a washer

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or pin 38A secured to the shank and the underside of bracket or plate 17.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrated only and not in a limiting sense.

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## WHAT I CLAIM AS MY INVENTION IS:

(1) A hitch assembly for securement to a vehicle bumper comprising in combination a main telescopic hitch arm and a secondary telescopic hitch arm, means pivotally securing each arm by the inner end thereof to said bumper in spaced apart relationship for pivoting in a horizontal plane, a hitch clevis secured to the outer end of said main hitch arm, means cooperating between the outer end of said secondary hitch arm to detachably secure same to adjacent the outer end of said main hitch arm thereby forming a substantially triangular hitch configuration when viewed in plan and means to store said arms in side by side relationship under the associated vehicle bumper, when not in use.

(2) The hitch assembly according to Claim 1 in which said means cooperating between the outer end of said secondary hitch arm to detachably secure same to adjacent the outer end of said main hitch arm includes a pair of spaced and parallel secondary arm engaging plates formed on said outer end of said main hitch arm, the outer end of said secondary hitch arm engaging between said plates and pin means detachably engaging through aligning apertures in said plates and said outer end of said secondary hitch arm.

(3) The hitch assembly according to Claim 2 in which said plates and said hitch clevis are formed integrally and are secured to and extend from the outer end of said main hitch arm.

(4) The hitch assembly according to Claim 1 in which said means to store said arms in substantially side by side relationship includes said main and secondary hitch arms being pivotally mounted to said bumper for folding under said bumper in said side by side relationship, an apertured support lug extending horizontally from said main hitch arm and being positioned spaced from the inner end thereof, said outer end of said secondary hitch arm engaging upon said lug and detachable pin means extending through matching aperture's in the outer end of said secondary hitch arm and said lug to detachably maintain said arms in the stored position.

(5) The hitch assembly according to Claim 2 in which said means to store said arms in substantially side by side relationship includes said main and secondary hitch arms being pivotally mounted to said bumper for folding under said bumper in said side by side relationship, an apertured support lug extending horizontally from said main hitch arm and being positioned spaced from the inner end thereof, said outer end of said secondary hitch arm engag-

ing upon said lug and detachable pin means extending through matching apertures in the outer end of said secondary hitch arm and said lug to detachably maintain said arms in the stored position.

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(6) The hitch assembly according to Claim 3 in which said means to store said arms in substantially side by side relationship includes said main and secondary hitch arms being pivotally mounted to said bumper for folding under said bumper in said side by side relationship, an apertured support lug extending horizontally from said main hitch arm and being positioned spaced from the inner end thereof, said outer end of said secondary hitch arm engaging upon said lug and detachable pin means extending through matching apertures in the outer end of said secondary hitch arm and said lug to detachably maintain said arms in the stored position.

ADE & COMPANY

402 - 211 Portage Avenue,  
Winnipeg, Manitoba  
R3B 2A2



FOLDABLE HITCH

ABSTRACT OF THE DISCLOSURE

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Hitches for trucks and the like are difficult to store and usually have to be detached when not in use. The present hitch includes a pair of telescopic arms pivotally connected to attachment brackets under a bumper, spaced apart from one another and when in use, converging forwardly to a common apex and being detachably secured in this position. One arm is provided with a hitch clevis on the distal end thereof. The telescopic construction of the arms assists in connecting the hitch clevis to the device being towed such as an implement, trailer or the like. When stored, the two arms are disconnected at the apex and are folded under the bumper in side by side relationship and held by a detachable pin until required.

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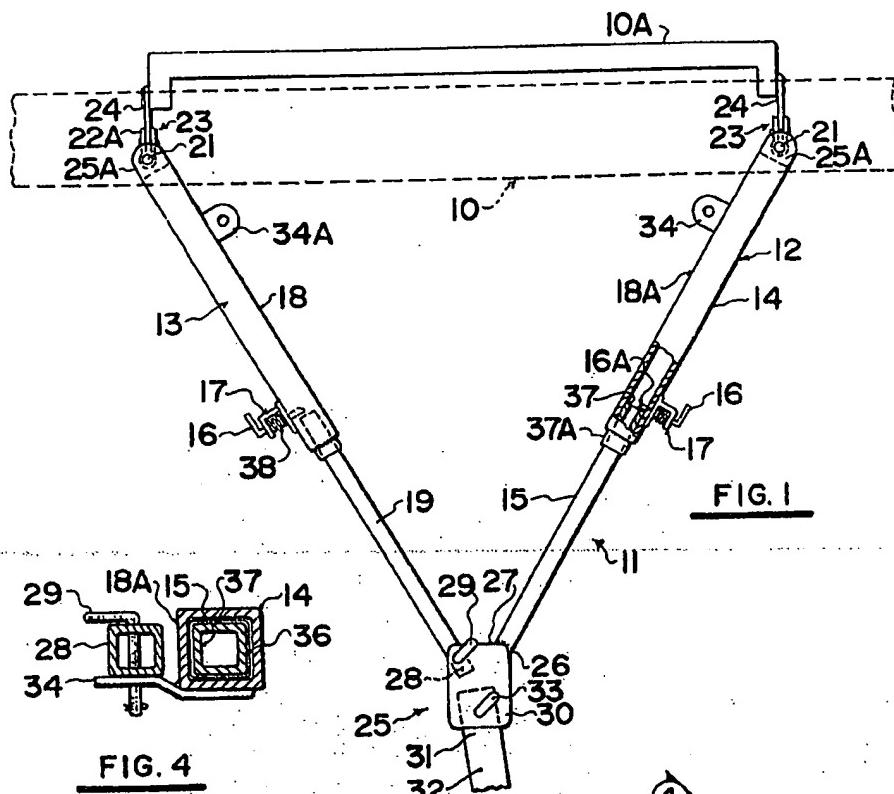


FIG. 4

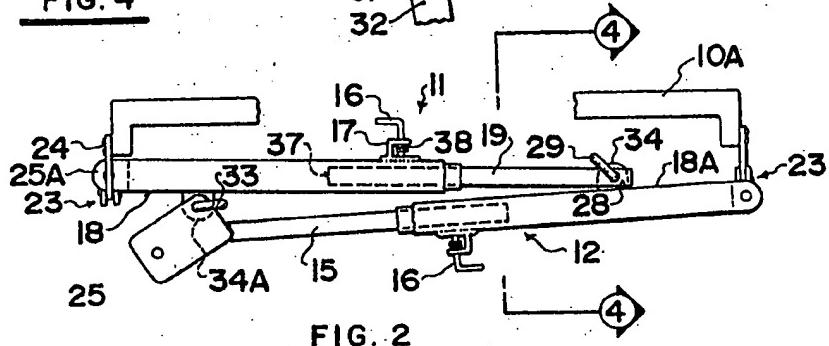


FIG. 2

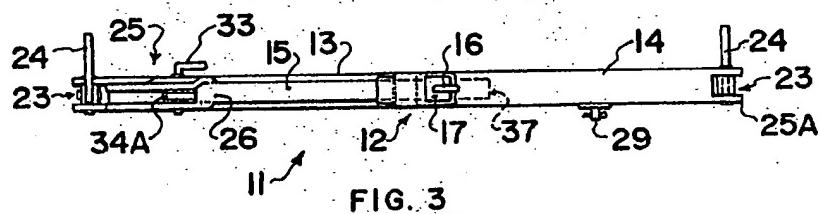


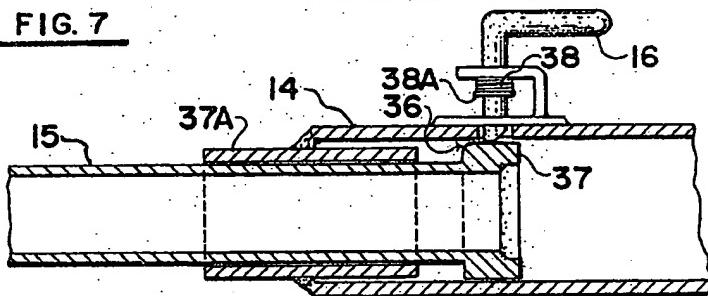
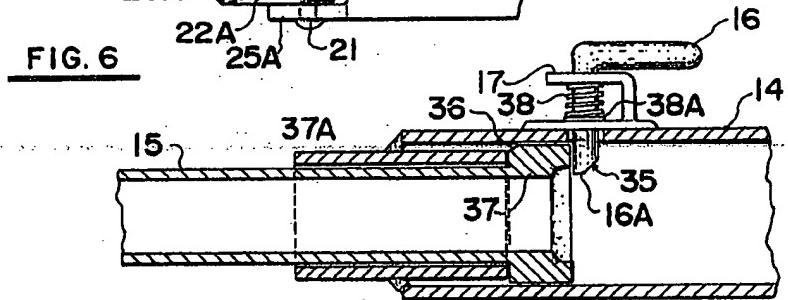
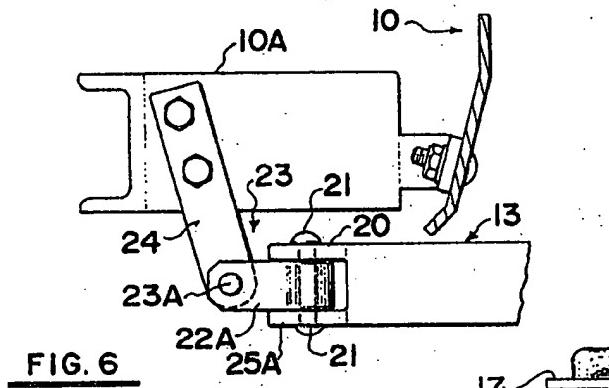
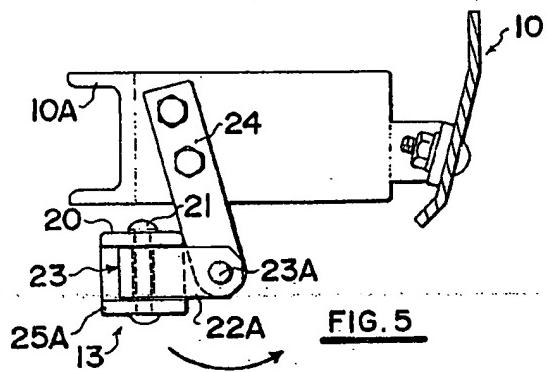
FIG. 3

Inventor: ELMER MERVIN KJELDSLII

By: Ade & Company

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Inventor: ELMER MERVIN KJELDSLI

By: *Abe, Company*